



Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of

## Structure and Practices of the Video Relay Service Program

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CG Docket No. 10-51

CONVO COMMUNICATIONS, LLC COMMENTS ON  
THE APPLICATION OF NEW AND EMERGING TECHNOLOGIES  
FOR VIDEO RELAY SERVICE USE

## Definitions

In this filing we adhere to several working definitions to differentiate distinct classes of VRS endpoints.

## “Videophones”

This refers to proprietary videophones distributed by VRS providers for the purpose of enabling VRS access. These videophones are hardware-based.

## “VRS software”

This refers to software distributed by VRS providers that are developed for the purpose of VRS access and can be downloaded onto devices such as desktop computers, laptop computers, tablets, and smartphones.

## Executive Summary

The greatest opportunity for functional equivalence in VRS lies in leveraging frequently-refreshed hardware that can be bought commercially, along with VRS software that incorporates improved technologies and features more quickly than proprietary videophones. Taken together, frequently-refreshed off-the-shelf hardware and VRS software provide an excellent VRS ecosystem. However, off-the-shelf non-VRS software



often brings new and emerging technologies to the marketplace faster than VRS software, and so the use of such non-VRS software for VRS should be allowed with conditions outlined by the Commission.

### **State of current technology**

Since 2002, the dominant videophones used for VRS access have been the Sorenson VP-100 and VP-200. Those two videophones represent a state of VRS technology that has been surpassed in portability and ease-of-use. Lacking a built-in display and wireless Internet access, they have to be connected with an external display and a broadband router in order to be usable.

### **Videophones**

Videophones have been released in the interim that have built-in displays or wireless Internet access (sometimes both). Those videophones, however, have always been proprietary – distributed by, supported by and controlled by – a VRS company. Unfortunately, those proprietary videophones rarely see hardware updates due to the expense involved in designing, producing and distributing them.

### **VRS Software**

By comparison, VRS software has developed at a faster pace. Ever since Ed Bosson, Convo's Chairman of the Board, used desktop computers with a Web camera and Microsoft NetMeeting acting as makeshift VRS software in the first-ever VRS trials in the State of Texas in 1995, VRS software has come a long way.

The flexibility and innovation inherent in VRS software is attributable to the variety of hardware on which it can run. Unlike videophones, which are constrained to the same physical hardware and to that hardware's strengths and weaknesses, individuals can choose to run multiple VRS software from multiple VRS providers on the hardware they prefer, whether it is a desktop computer, a laptop computer, a tablet, or on a remote server in "the Cloud."

Unlike videophones, software can be developed and widely distributed in a short timeframe. Instead of being developed over years, and distributed in months, software can be developed in months and distributed in days. This fact not only means that software is cheaper to develop and deploy, but also that software can better keep pace with the advancement of technology.

### **Increasing availability of off-the-shelf equipment capable of being used with VRS software**



In recent years, the amount of off-the-shelf hardware incorporating the features necessary for VRS – a Web camera and an Internet connection - has increased. Using laptops as an example, five years ago built-in Web cameras were not common, but today they are come standard.

Using off-the-shelf hardware provides benefits in that the release cycles are typically much shorter than those of proprietary videophones. Processor technologies, camera technologies, battery technologies, and so forth are updated frequently enough that computers typically have release cycles of one year or less, with each release cycle bringing faster, smaller, and more mobile products to the marketplace.

The types of hardware capable of being used for VRS have also evolved. Initially, only personal computers were suitable, but the advancement of computing technology has made it possible for smaller devices, such as mobile phones and laptops, to run software previously constrained to more powerful personal computers.

A new category of off-the-shelf mobile devices – products that are somewhere between laptop computers and handheld cell phones on the portability scale – has started to emerge. This category of mobile devices – tablets – as of late typically have built-in Web cameras and wireless Internet access via wi-fi.

### **Limitations of off-the-shelf video communication software**

Currently, no off-the-shelf video communication software solution, in its default configuration, meets all of the requirements necessary for VRS use, such as 9-1-1 calling, ten-digit numbering, the ability to call and connect with video relay centers, and so forth. It is only through modification by a VRS company that such solutions become VRS-compatible.

Modification of off-the-shelf video communication software can make their use with VRS possible (see Purple VRS and ZVRS' FaceTime VRS application). However, features unique to VRS such as the ten-digit telephone numbers ("TDNs") that are administered through the iTRS ENUM Database ("Database"), and 9-1-1 calling capability are often missing from such software.

In response to the Commission's question of the limitations of off-the-shelf video communication software, such software is limited by the fact that they are not designed to work with VRS. Further, companies that develop such software have limited incentive to program their interoperability with VRS; even when effort is made, the result is often limited VRS functionality.



However, because of the Commission's limitation of TDNs to VRS users, VRS users often have to use software such as Skype, iChat, oovoo, and so forth to have conversations with hearing friends or family members who know sign language.

Convo believes that off-the-shelf video communication software has a place in VRS, as they open up new opportunities for communication and allow VRS users to communicate via video with a wider range of people.

Convo further believes that the Commission should issue a NPRM specifically on how to introduce VRS capability to off-the-shelf video communication software, and seek technical comment from the VRS community as well as the developers of such off-the-shelf software, in order to find the best solution. Convo suggests that the use of an API, such as the one discussed later in this comment, may be the ideal solution.

### **Paths to VRS of the future**

To ensure the maximum degree of functional equivalence while preserving the opportunity for innovation, it will be necessary to define the expected functionality of VRS software while resisting, to the extent possible, the temptation of regulating how to implement that functionality.

The VRS ecosystem provides a telephone experience that is theoretically as close to functional equivalence as is possible, using video chat. Broken down, there are two main types of calls that VRS enables: first, reimbursed calls from a deaf or hard of hearing caller communicating in American Sign Language ("ASL") user to a voice caller; and, second, unreimbursed calls between two or more ASL users ("point-to-point" calls). To be effective to the maximum extent, any rulemaking regarding new and emerging technologies must fully consider both types of calls.

### **"Necessary Features and Functions"**

In the Commission's public notice seeking comment on the application of new and emerging technologies for VRS use, the Commission asked what specific features of off-the-shelf equipment, services, and software are needed to effectively use VRS.

As mentioned before, Convo believes that the future of VRS, and the best chance of incorporating new and emerging technologies, lies in the use of off-the-shelf equipment and VRS software. It is according to this belief that the following comments are made.

Addressing off-the-shelf equipment specifically, Convo does not believe that the Commission should concern itself with regulating lux (lx) level ratings, pan, zoom, tilt, or jitter reduction where it concerns off-the-shelf equipment. Indeed, Convo believes that



attempts to regulate such superficial features would have the adverse effect of negating consumer freedom of choice.

As consumers of the nation's telephone network can choose the handset or mobile phone with the features that best fit their needs, so should consumers of VRS. Convo believes that the consumer right to choose the off-the shelf equipment and VRS software that best meet their needs should not be abridged by Commission regulation.

On the other hand, there are two specific items of note that the Commission ought to take firm action on, as they directly and materially affect the quality of the VRS experience: broadband speeds and the establishment of universal video standards.

Broadband speeds, in particular, directly and materially affect the quality of the video being transmitted. There are limitations to video codecs; even the best codec can only compress video so much before the video quality becomes unacceptable. Ensuring that VRS customers have access to, at minimum, a broadband Internet connection (recently defined by the Commission as a minimum of 4MBPS download and 1MBPS upload speeds) will ensure that customers are able to have sufficient video quality, measured in picture clarity as well as frames per second, for legible VRS conversation.

Universal video standards go directly to the matter of functional equivalence. In recent years, a multitude of video communication software has come on the market (Skype, oovoo, iChat, and Facetime, just to name a few) but very rarely is the software interoperable. Customers consequently are not able to experience cross-software (software A to software B) video conversations.

Convo has consistently supported a Commission role in establishing universal video standards to facilitate cross-software video conversations.

While Convo prefers universal video standards, the Commission would also do well to establish regulations that facilitate interoperability in the absence of universal video standards.

In its filing suggesting recommended VRS reforms, on February 24, 2011, Convo put forth proposals it believes will greatly benefit the VRS industry. Two of those proposals are directly relevant to the Commission's inquiry into the application of new and emerging technologies for VRS use.

Application Programming Interfaces ("APIs") provide a method for third-party applications to connect to and interface with a native application. The following are two examples of how APIs function.



The first example is that of AOL Instant Messenger (“AIM”). Through an API provided by AOL, third party applications such as iChat, Trillian, Disgby, Adium, Beejive and IM+, to name a few, are able to fully interact with the AIM network. Many features available to AIM users are also available when those users log in to AIM through one of these third-party applications.

The second example is that of Apple’s FaceTime. Apple has publicly stated that it will release an API to enable third-party video chat programs to directly interact with the FaceTime network. If and when it is released, such an API will allow third-party video chat programs to interact with the FaceTime network without needing to resort to workarounds such as video transcoding.

APIs require no conversion of data between the native application and third-party applications. The API provides a framework that enables direct interaction, and thus is the more reliable option.

As APIs simply provide a way for third-party applications to integrate with a native application, and to access the features and functions of the native application, it is a trivial matter to provide continuity. Thus, while third-party chat applications (iChat, Trillian, Digsby, et. al.) attempt to differentiate themselves from AIM with enhanced features and improved user interfaces, there is basic continuity as users can always access their AIM buddy list through any of those third-party applications, and use basic features that AIM enables through their API, like file-sharing, video chat, and so forth.

In Convo’s February 24, 2011 filing, a proposal for a “Centralized TRS API” was put forth. Convo urges the Commission to establish a secure centralized authentication server that stores VRS user accounts and a selection of basic features that should be available to the user regardless of what product they use, such as address books and call histories. A secure centralized authentication server would have the added benefit of addressing the problem of “runaway phone numbers” and allow users to maintain just one TDN per physical location, should they so choose.

It is important to note, however, that VRS providers be allowed to develop innovative products and incorporate new and emerging technologies without being constrained by any such API. Indeed, Convo’s proposal is meant to ensure basic continuity should users choose different VRS software, and is not meant to limit VRS software to the features sharable by the API. Convo’s proposal is not meant to allow users to change the default provider on their VRS software (although the proposal supports the ability for users to change the default provider on proprietary videophones, in conjunction with the establishment of an access fee), due to the ease of developing VRS software as opposed to proprietary videophones, and the resultant abundance of VRS software.



It is also important to note that currently available non-VRS video communication software is used by a significant number of VRS users for point-to-point calls. For example, Tango and Fring, two of the first applications to push the envelope by offering video calling over the 3G network, were downloaded by VRS users wishing to make point-to-point video calls “on the go.”

Because non-VRS video communication software can open up calling possibilities for VRS users, Convo believes that it would be unreasonable of the Commission to limit their use in the absence of universal video standards, and urges the Commission to allow VRS providers, where the technology to do so exists, to modify such software so they can be used with VRS. While it would be reasonable for the Commission to set forth certain requirements governing the use of such software, such as 9-1-1 access and TDN compatibility, it would be neither reasonable nor economical for to require VRS providers to make all such software interoperable until such time as universal video standards become possible.

David J. Bahar

A handwritten signature in black ink, appearing to read "David J. Bahar", with a stylized, cursive script.

Director of Government and Regulatory Affairs  
Convo Communications, LLC